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2016

## Nebraska Summary: S1072 Challenger MT545E

Nebraska Tractor Test Laboratory

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# SUMMARY OF OECD TEST 2990-NEBRASKA SUMMARY 1072

## CHALLENGER MT545E TECHSTAR DIESEL

### CONTINUOUSLY VARIABLE TRANSMISSION

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)	Mean Atmospheric Conditions
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1102 rpm)</b>						
156.1 (116.4)	2099	8.99 (34.01)	0.402 (0.245)	17.36 (3.42)	0.54 (2.05)	
<b>Standard Power Take-off Speed (1001 rpm)</b>						
164.7 (122.8)	1906	9.10 (34.45)	0.386 (0.235)	18.09 (3.56)	0.54 (2.04)	
<b>Maximum Power (1 hour)</b>						
164.7 (122.8)	1906	9.10 (34.45)	0.386 (0.235)	18.09 (3.56)	0.54 (2.04)	

#### VARYING POWER AND FUEL CONSUMPTION

156.1 (116.4)	2099	8.99 (34.01)	0.402 (0.245)	17.36 (3.42)	0.54 (2.05)	Air temperature
133.7 (99.7)	2117	8.03 (30.41)	0.419 (0.255)	16.65 (3.28)	0.51 (1.93)	72°F (22°C)
100.6 (75.0)	2125	6.45 (24.42)	0.448 (0.272)	15.59 (3.07)	0.48 (1.82)	Relative humidity
67.3 (50.2)	2132	4.91 (18.61)	0.510 (0.310)	13.70 (2.70)	0.35 (1.34)	75%
33.8 (25.2)	2144	3.42 (12.94)	0.706 (0.429)	9.89 (1.95)	0.25 (0.93)	Barometer
---	2150	2.12 (8.04)	---	---	0.03 (0.13)	30.2" Hg (102.4 kPa)

Maximum torque - 507 lb.-ft. (688 Nm) at 1400 rpm

Maximum torque rise - 29.9%

Torque rise at 1700 engine rpm - 22%

Power increase at 1906 engine rpm - 5%

#### DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged)

#### FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Power at Rated Engine Speed—Turtle 8</b>									
119.8 (89.3)	9260 (41.2)	4.85 (7.80)	2096	3.5	0.526 (0.320)	13.30 (2.62)	189 (87)	68 (20)	30.0 (101.7)
<b>75% of Pull at Rated Engine Speed—Turtle 8</b>									
92.0 (68.6)	7015 (31.2)	4.92 (7.91)	2122	2.6	0.615 (0.374)	11.37 (2.24)	190 (88)	68 (20)	30.0 (101.7)
<b>50% of Pull at Rated Engine Speed—Turtle 8</b>									
61.3 (45.7)	4630 (20.6)	4.96 (7.99)	2130	1.5	0.659 (0.401)	10.61 (2.09)	190 (88)	68 (20)	30.0 (101.7)
<b>75% of Pull at Reduced Engine Speed—Turtle 10</b>									
91.5 (68.2)	6990 (31.1)	4.91 (7.90)	1455	1.7	0.507 (0.308)	13.81 (2.72)	196 (91)	70 (21)	30.0 (101.7)
<b>50% of Pull at Reduced Engine Speed—Turtle 10</b>									
61.6 (45.9)	4675 (20.8)	4.94 (7.95)	1461	1.4	0.536 (0.326)	11.52 (2.57)	196 (91)	70 (21)	30.0 (101.7)

**Location of tests:** IRSTE, Centre d'Antony, 1 rue Pierre-Giles de Gennes, CS 10030 92761 Antony, Cedex France

**Dates of tests:** July to August, 2016

**Manufacturer:** AGCO S.A. ZA, n2, BP 60307, Avenue Blaise Pascal, 60026 Beauvais, Cedex, France

**CONSUMABLE FLUIDS:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.839 Fuel weight 6.98 lbs/gal (0.837 kg/l) Diesel Exhaust Fluid (DEF) 32% aqueous urea solution DEF weight 9.08 lbs/gal (1.091 kg/l) Oil SAE 15W40 API service classification CJ-4 Transmission and hydraulic lubricant BP Terrac Tractan 9 10W/40 Front axle lubricant SAE 85W140 API GL-5

**ENGINE:** Make AGCO Power Diesel Type six cylinder vertical with turbocharger, air to air intercooler and SCR (selective catalyst reduction) technology Serial No. Z0018 Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 4.252" x 4.724" (108.0 mm x 120.0 mm) Compression ratio 17.4 to 1 Displacement 402 cu in (6596 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one full flow cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil Fuel filter one paper element Muffler underhood Exhaust vertical Cooling medium temperature control thermostat and variable speed fan

**CHASSIS:** Type front wheel assist Serial No. F 049 023 Tread width rear 52.8" (1340 mm) to 87.8" (2230 mm) front 52.8" (1340 mm) to 87.8" (2230 mm) Wheelbase 113.2" (2875 mm) Hydraulic control system direct engine drive Transmission CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment within the ranges noted. The transmission has two mechanical ranges. Nominal travel speeds mph (km/h) forward: Low range 0-17 (0-28), high range 0-25 (0-40) reverse: Low range 0-10 (0-16), high range 0-23 (0-38) Clutch a foot pedal controls the hydrostatic oil flow Brakes multiple wet disc hydraulically operated by two foot pedals that can be locked together Steering hydrostatic Power take-off 540 rpm at 1868 engine rpm or 1000 rpm at 1903 engine rpm Unladen tractor mass 17295 lb (7845 kg)

# DRAWBAR PERFORMANCE AT 1900 ENGINE RPM

## (Unballasted - Front Drive Engaged) MAXIMUM POWER AT SELECTED TRAVEL SPEEDS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Barom. inch Hg (kPa)		
108.4 (80.8)	15600 (69.4)	2.60 (4.19)	2113	15.0	Turtle 4.5 0.564 (0.343)	12.40 (2.44)	183 (84)	68 (20)	30.0 (101.6)
129.5 (96.6)	12455 (55.4)	3.90 (6.28)	1899	6.8	Turtle 6.5 0.496 (0.302)	14.11 (2.78)	187 (86)	68 (20)	30.0 (101.7)
131.7 (98.2)	9960 (44.3)	4.96 (7.98)	1917	5.3	Turtle 8 0.492 (0.299)	14.21 (2.80)	189 (87)	68 (20)	30.0 (101.7)
132.8 (99.0)	7915 (35.2)	6.29 (10.12)	1932	4.2	Turtle 10 0.487 (0.296)	14.37 (2.83)	190 (88)	70 (21)	30.0 (101.7)
126.6 (94.4)	5870 (26.1)	8.09 (13.02)	1890	3.5	Turtle 13 0.500 (0.304)	14.01 (2.76)	192 (89)	70 (21)	30.0 (101.7)
121.6 (90.7)	5010 (22.3)	9.10 (14.65)	1925	3.0	Turtle 15 0.524 (0.318)	13.37 (2.63)	194 (90)	70 (21)	30.0 (101.7)
125.7 (93.7)	8500 (37.8)	5.54 (8.92)	1900	4.6	Rabbit 9 0.512 (0.312)	13.65 (2.69)	190 (88)	70 (21)	30.0 (101.7)
124.2 (92.6)	6340 (28.2)	7.34 (11.82)	1902	4.1	Rabbit 12 0.514 (0.313)	13.60 (2.68)	194 (90)	72 (22)	30.0 (101.7)
123.0 (91.7)	5035 (22.4)	9.16 (14.74)	1916	3.3	Rabbit 15 0.524 (0.318)	13.37 (2.63)	187 (86)	72 (22)	30.0 (101.7)
116.9 (87.2)	4250 (18.9)	10.32 (16.61)	1908	2.7	Rabbit 17 0.547 (0.333)	12.79 (2.52)	192 (89)	72 (22)	30.0 (101.7)

TRACTOR SOUND LEVEL WITH CAB	Front wheel drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in Turtle 8	68.0	68.0
Bystander		--

## TIRES, BALLAST AND WEIGHT

Rear Tires - No., size, ply & psi(kPa)  
 Front Tires - No., size, ply & psi(kPa)  
 Height of Drawbar  
 Static Weight with operator - Rear  
     - Front  
     - Total

## Tested without ballast

Two 650/65R38;\*\*,13(90)  
 Two 540/65R28;\*\*,15(100)  
 19.7 in (500 mm)  
 10220 lb (4635 kg)  
 7240 lb (3285 kg)  
 17460 lb (7920 kg)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

**NOTE:** The data on this summary was obtained from OECD report 2990 conducted on the Massey Ferguson 7718 Dyna VT Diesel.

We, the undersigned, certify that this is a true summary of data from OECD Report No. 2990, Nebraska Summary 1072, January 9, 2017.

Roger M. Hoy  
 Director

M.F. Kocher  
 P.J. Jasa  
 S.K. Pitla  
 Board of Tractor Test Engineers

## HYDRAULIC PERFORMANCE

CATEGORY: 2, NAO lower links

Quick Attach: None

OECD Static test

Maximum force exerted through whole range: 16750 lbs (74.5 kN)

i) Sustained pressure of the open relief valve: 2915 psi (201 bar)

Standard Pump

Optional pump

29 GPM (110 l/min)

50 GPM (190 l/min)

two outlet sets combined

two outlet sets combined

ii) Pump delivery rate at minimum pressure: 29.6 GPM (112.1 l/min)

51.9 GPM (196.5 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

27.0 GPM (102.3 l/min)

48.2 GPM (182.5 l/min)

Delivery pressure:

2725 psi (188 bar)

2395 psi (165 bar)

Power:

42.9 HP (32.0 kW)

67.3 HP (50.2 kW)

single outlet set

single outlet set

ii) Pump delivery rate at minimum pressure: 30.2 GPM (114.2 l/min)

32.9 GPM (124.6 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

27.5 GPM (104.0 l/min)

27.5 GPM (104.0 l/min)

Delivery pressure:

2470 psi (170 bar)

2410 psi (166 bar)

Power:

39.6 HP (29.5 kW)

38.6 HP (28.8 kW)

## HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	30.4	773
B	14.8	375
C	16.5	419
D	14.0	355
E	10.8	275
F	10.9	276
G	34.5	875
H	2.4	60
I	17.8	452
J	23.6	599
K	27.0	687
L	47.8	1213
M	24.4	621
N	40.3	1024
O	9.3	235
P	47.6	1209
Q	38.0	964
R	30.7	780

